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L. Edelen

L. EDELEN

Certifying Officer

PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(e)

Docket No.	L3440-181160	Type a plus sign (+) inside this box →	+
INVENTOR(s)/APPLICANT(s)			
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STATE	Georgia	ZIP CODE	30309-4530 COUNTRY U.S.A.
ENCLOSED APPLICATION PARTS (check all that apply)			
<input checked="" type="checkbox"/> Specification	No. of Pages 8	<input type="checkbox"/> Small Entity Statement	
<input checked="" type="checkbox"/> Drawing(s)	No. of Sheets 12	<input type="checkbox"/> Other (specify)	
METHOD OF PAYMENT (check one)			
<input checked="" type="checkbox"/>	A check or money order is enclosed to cover the Provisional filing fee		
<input type="checkbox"/>	The Commissioner is hereby authorized to charge filing fees and credit Deposit Account Number 11-0855		
<input checked="" type="checkbox"/>	The Commissioner is hereby authorized to charge any deficiencies in the required filing fee or credit any payment to Deposit Account Number 11-0855.		
PROVISIONAL FILING FEE AMOUNT		\$ 150.00	

The invention was made by an agency of the United States Government, or under contract with an agency of the United States Government:

<input checked="" type="checkbox"/> No.
<input type="checkbox"/> Yes, the name of the U.S. Government agency and the Government contract number are:

Respectfully submitted,

SIGNATURE: Camilla C. Williams Date: April 9, 1999
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☒ Additional inventors are being named on separately numbered sheets attached hereto.

TITLE: SCALPEL ASSEMBLY
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DOCKET NO.: L3440-81160
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THE UNIVERSITY OF CHICAGO

PROVISIONAL APPLICATION FILING ONLY

CERTIFICATE OF MAILING UNDER 37 CFR 1.10

I hereby certify that this Provisional Application for Patent and any documents referred to as attached therein are being deposited with the United States Postal Service on this date, April 9, 1999, in an envelope as "Express Mail-Post Office to Addressee" service under 37 CFR 1.10, Mailing Label Number EM4036118581US addressed to Box Provisional Patent Application, Assistant Commissioner for Patents, Washington, D.C. 20231.

[Signature]

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SCALPEL ASSEMBLY

Background of the Invention

1. Field of the Invention

The present invention relates to a scalpel having a releasable, disposable blade and a reusable scalpel assembly.

2. Description of Related Art

Surgical scalpels have long been available, including such devices utilizing disposable blades. There is a need for a scalpel with better ergonomic properties. In addition, there is a need for a scalpel assembly that allows easy installation of a blade and which allows easy, safe release of a disposable blade and that can be manipulated with one hand. There is also a need for such a scalpel assembly to be durable and able to withstand repeated autoclaving and other sterilization techniques.

Summary of the Invention

This invention is a scalpel assembly comprising a push button ejectable blade. This allows a used or contaminated blade to fall freely from the scalpel assembly into a disposal receptacle, such as a sharps container, without direct contact of medical personnel with the used or contaminated blade. The disposable blade is utilized and engaged by a blade bar that extends from a handle assembly. This blade bar may be extended with one hand by manipulating a push button, releasing the blade from the handle. The push button is located on the end of the handle remote from the blade, so that contact between the user's fingers and the blade is unnecessary and unlikely. This scalpel uses a conventional disposable scalpel blade, which may be installed easily by engaging the blade with the blade bar.

Accordingly, it is an object of this invention to provide a scalpel that allows release of a blade without requiring medical personnel to touch the blade.

It is a further object of this invention to provide a scalpel that allows release of a blade by manipulation with one hand.

Another object of this invention is to provide a scalpel assembly that allows easy blade installation.

It is a further object of this invention to provide a scalpel assembly that is durable, and capable of withstanding repeated sterilization.

Another object of this invention is to provide a scalpel assembly with desirable ergonomic properties.

These and other objects and advantages are achieved by providing a scalpel that comprises a scalpel assembly and a releasable, disposable scalpel blade. The scalpel assembly is adapted to engage and retain the blade during use, and to release the blade when a button on the scalpel assembly is depressed.

This invention can be better understood by reference to the Brief Description of the Drawings, which should not be interpreted to limit the scope thereof.

Brief Description of the Drawings

FIG. 1A is a perspective view of a scalpel assembly of one embodiment of this invention.

FIG. 1B is an exploded perspective view of a scalpel of this invention.

FIG. 2A is an exploded perspective view of a handle assembly forming a part of the scalpel assembly of one embodiment of this invention.

FIG. 2B is a side elevation view of the handle assembly of FIG. 2A.

FIG. 2C is an end elevation view of the handle assembly of FIG. 2A and 2B.

FIG. 3A is an exploded perspective view of a button assembly forming a part of the scalpel assembly of one embodiment of this invention.

FIG. 3B is a side elevation view of the button assembly of FIG. 3A.

FIG. 3C is an end elevation view of the button assembly of FIG. 3A.

FIG. 4A is a top plan view of the scalpel assembly of FIG. 1A.

FIG. 4B is a side elevation view of the scalpel assembly of FIG. 1A.

FIG. 4C is a perspective view of the scalpel assembly of FIG. 1A.

FIG. 5A is an end elevation view of a push rod forming part of the button assembly of one embodiment of this invention.

FIG. 5B is a longitudinal section view of the push rod of FIG. 5A.

FIG. 6A is an end elevation view of a button retainer forming part of the handle assembly of one embodiment of this invention.

FIG. 6B is a side elevation section view of the button retainer of FIG. 6A.

FIG. 7A is an end elevation view of a button forming part of the button assembly of one embodiment of this invention.

FIG. 7B is a side elevation view in section of the button of FIG. 7A.

FIG. 8A is a perspective view of a collet end forming part of the handle assembly of one embodiment of this invention.

FIG. 8B is an end elevation view of the collet end of FIG. 8A.

FIG. 8C is a side elevation section view of the collet end of FIG. 8A.

FIG. 9A is a perspective view of a collet forming part of the handle assembly of one embodiment of this invention.

FIG. 9B is an end elevation view of the collet of FIG. 9A.

FIG. 9C is a side elevation section view of the collet of FIG. 9A.

FIG. 10A is a perspective view of a push rod forming part of the button assembly of an alternative embodiment of this invention.

FIG. 10B is an end elevation view of the push rod of FIG. 10A.

FIG. 10C is a longitudinal view partly in section of the push rod of FIG. 10A.

FIG. 11A is a perspective view of the button forming part of a button assembly of an alternative embodiment of this invention.

FIG. 11B is an end elevation view of the button of FIG. 11A.

FIG. 11C is a side elevation section view of the alternative button of FIG. 11A.

FIG. 12A is a perspective view of the button retainer forming part of the handle assembly of an alternative embodiment of this invention.

FIG. 12B is an end elevation view of the button retainer of FIG. 12A.

FIG. 12C is a side elevation section view of the button retainer of FIG. 12A.

Detailed Description of Specific Embodiments

The present invention relates to a scalpel having an easily detachable, disposable blade that can be removed at the touch of a button on the scalpel. This eliminates the need for medical personnel to handle or touch the blade after the blade has come into contact with surgical patients or their body fluids.

In one embodiment, the scalpel contains a scalpel assembly, which serves as an ergonomic surgical instrument and is handled by medical personnel, and the disposable scalpel blade, which need be handled only when it is sterile and is being attached to the scalpel assembly, if at all. In a more particular embodiment of this invention, the scalpel

assembly comprises an attachment mechanism for receiving and engaging the disposable scalpel blade, and may desirably be adapted to receive and engage conventional, disposable scalpel blades.

In an even more specific embodiment of the invention, the scalpel assembly contains a handle assembly and a button assembly, whereby the handle assembly is disposed around the button assembly and provides a surface for the surgeon or medical personnel to grip the scalpel during transport or use. The button assembly serves to allow attachment and detachment of the blade from the scalpel assembly. The handle assembly is made up of a collet end, a collet, a handle body, and a button retainer. The collet houses the collet end. The proximal end of the handle body is attached to the collet. The interior surface of the distal end of the handle body is adapted to receive and engage the proximal end of the button retainer after the button assembly is inserted into the handle assembly. The button assembly is made up of a blade bar, a spring, which may be tapered, a push rod, and a button. The blade bar contains a groove, which allows it to engage a blade. The proximal end of the spring engages the interior of the handle assembly, desirably toward the proximal end. For example, the spring may engage against the distal end of the collet. The distal end of the spring is engaged by the push rod. The distal end of the blade bar is engaged with the proximal end of the push rod. The proximal end of the button is attached to the distal end of the push rod. Alternatively, two or more of the button, the push rod and the blade bar may be an integral piece. Depression of the distal end of the button compresses the spring and extends the blade bar, disengaging the blade.

This invention will be described herein by reference to the drawings; however, it should be understood that the drawings are directed to a specific embodiment of the invention and do not limit the scope thereof.

As shown in FIGS. 1A and 1B, the scalpel assembly of one embodiment of this invention includes a handle assembly 40 and a button assembly 78. The handle assembly of this embodiment contains collet end 20 housed within collet 22. Collet end 20 contains collet end bore 24, which provides for movement of blade bar 44 in and out of collet end 20 during engaging and releasing of the blade 50 in response to depressing button 76. Distal end 25 of collet end 20 is inserted into collet bore 26 of proximal end 27 of collet 22 by press fit, as shown in FIGS. 2A, 2B and 2C. As shown in FIGS. 2B and 2C, collet end 20 fits inside collet 22. Distal end 28 of collet 22 is inserted into body bore 29 at proximal end 30 of handle body 32 by press fit, as shown in FIGS. 2A and 2B. As used in the description of the scalpel assembly of this invention, a proximal end is one nearer to the blade and a distal end is one remote from the blade. Proximal end 34 of button retainer 36 is connected to distal end 38 of handle body 32. FIG. 2B shows handle assembly 40.

The button assembly 78 contains blade bar 44, tapered spring 56, push rod 62, and button 76. As shown in FIG. 1B, proximal end 42 of blade bar 44 contains groove 46. Proximal end 42 of blade bar 44 is inserted in slot 48 of blade 50 and a portion of the perimeter of slot 48 is received in u-shaped groove 46 in proximal end 42 of blade bar 44. Reduced diameter distal end 52 of blade bar 44 enters proximal end 54 of tapered spring 56, telescopes through tapered spring 56, and is received in push rod bore 58 in proximal end 60 of push rod 62. Tapered spring 56 is telescopically

connected to proximal end 60 of push rod 62, so that smaller diameter distal end 64 of tapered spring 56 is captured by notch 66 on push rod 62. As shown in FIGS. 1B and 3A, distal end 68 of push rod 62 contains recess 70. Recess 70 of push rod 62 allows air to escape when reduced diameter distal end 68 of push rod 62 is telescopingly inserted into button bore 72 in proximal end 74 of button 76. FIGS. 3A and 3B illustrate how blade bar 44, tapered spring 56, push rod 62 and button 76 combine to form button assembly 78. Button assembly 78, shown in FIG. 3B, is inserted into handle assembly 40, shown in FIG. 2B, before button retainer 36 is connected to distal end 38 of handle body 32. Button retainer 36 is then connected to distal end 38 of handle body 32 so that button 76 passes through button retainer bore 80. Proximal end 34 of button retainer 36 is threadedly connected to distal end 38 of handle body 32. Proximal end 74 of button 76 is held in place in handle body 32 by button retainer 36. Scalpel assembly 86 is shown in FIGS. 4A, 4B and 4C.

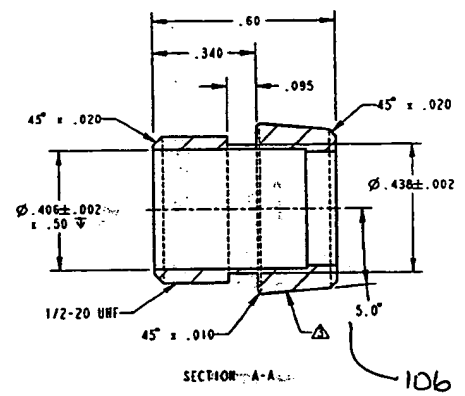
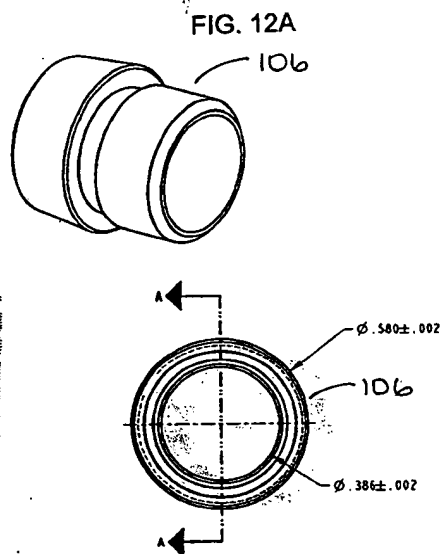
FIGS. 5A and 5B show push rod 62. Push rod bore 58 is located at proximal end 60 of push rod 62. Recess 70 is located at distal end 68 of push rod 62. Push rod 62 has notch 66. As shown in FIG. 6B, distal end 88 of button retainer 36 can be knurled to make disassembly easier. Threads 92 on button retainer 36 allow button retainer 36 to be joined to distal end 38 of handle body 32. FIGS. 7A and 7B show button 76, which has button bore 72 at proximal end 74. FIGS. 8A, 8B and 8C depict collet end 20. Proximal end 94 of collet end 20 contains slit 96. Collet end 20 has collet end bore 24. Collet 22 is depicted in FIGS. 9A, 9B and 9C. FIGS. 9A and 9C show threads 98 on collet 22.

Retraction of blade bar 44 secures blade 50 by positioning distal end 100 of blade 50 within slit 96 of collet end 20, so that blade 50 is held in place on blade bar 44. Blade 50 may be released with one hand by pressing distal end 101 of button 76. Tapered spring 56 retracts the blade bar 44, securing the blade in the scalpel assembly 86. Depression of button 76 forces blade bar 44 out of proximal end 94 of collet end 20 so that blade 50 is discharged from slit 96 in collet end 20 and blade 50 disengages from blade bar 44. This allows easy installation and push button ejection of blade 50.

FIGS. 10A, 10B, and 10C depict an alternative push rod 102, for use in the scalpel assembly of this invention. FIGS. 11A, 11B, and 11C depict an alternative button 104, for use in the scalpel assembly of this invention. FIGS. 12A, 12B, and 12C depict an alternative button retainer 106 for use in the scalpel assembly of this invention.

The invention having been thus described by reference to its specific embodiments is not to be limited thereby in its scope, but extends to variations and equivalents thereof as would be apparent to those of skill in the art.

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FIG. 11A

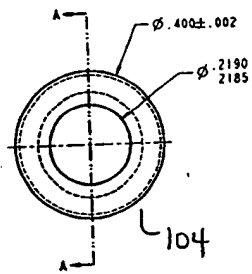
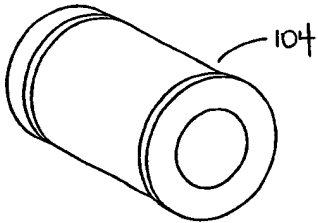


FIG. 11B

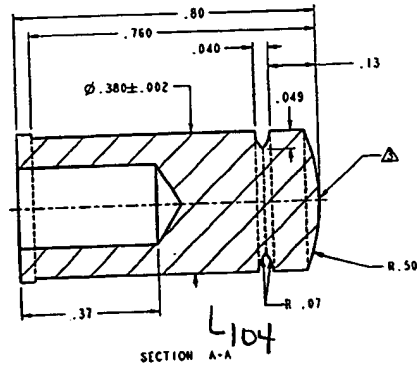
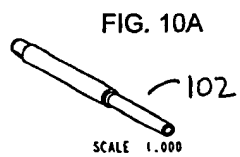


FIG. 11C



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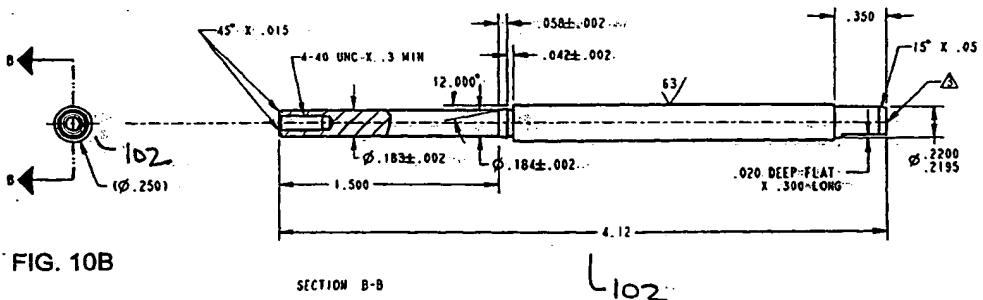


FIG. 10C

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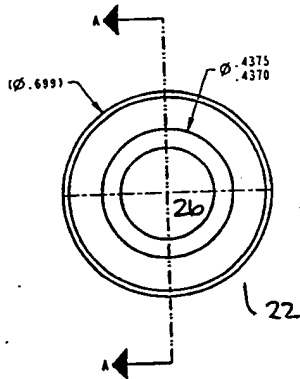
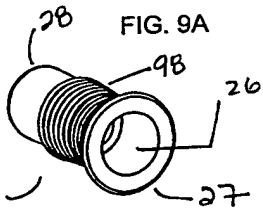


FIG. 9B

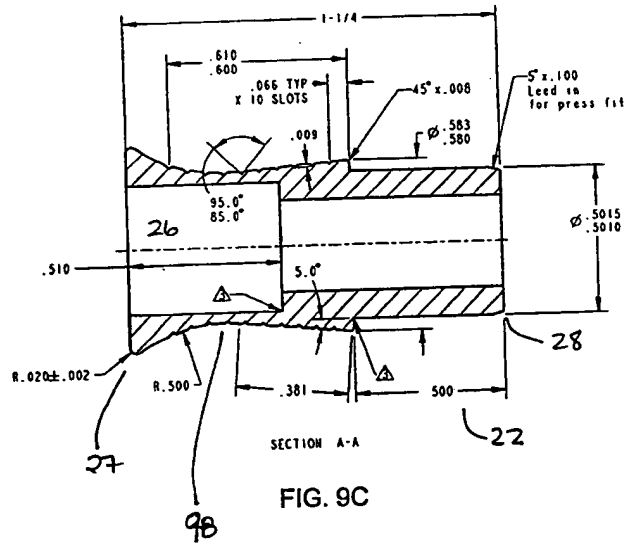


FIG. 9C

FIG. 8A

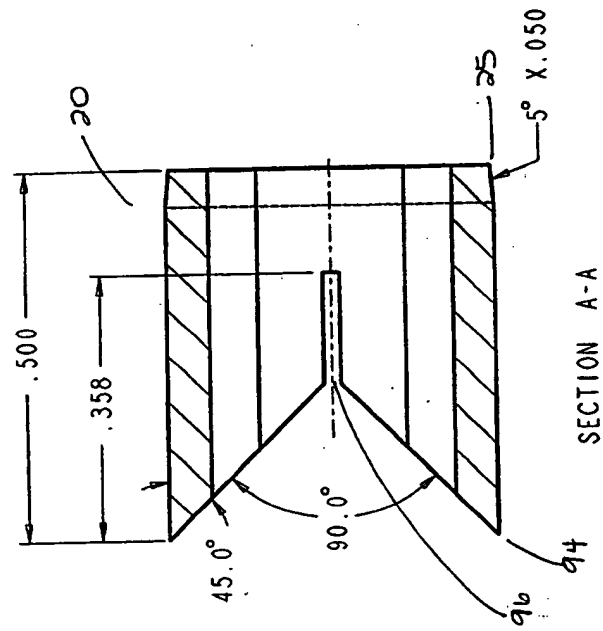
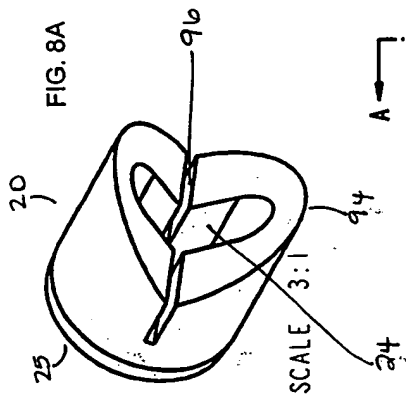
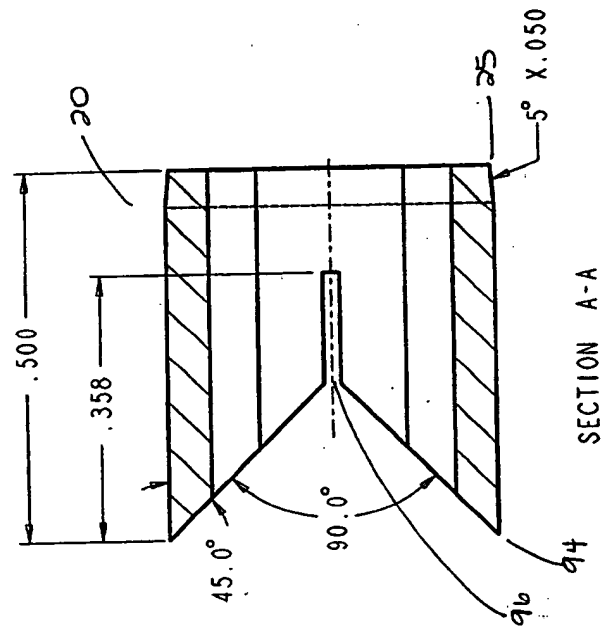


FIG. 8C

FIG. 8B



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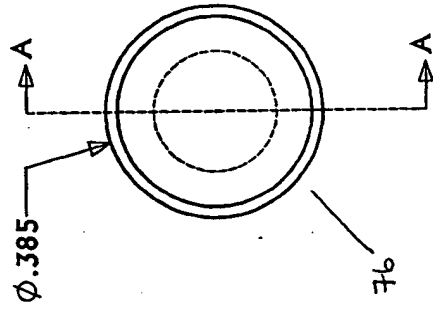


FIG. 7A

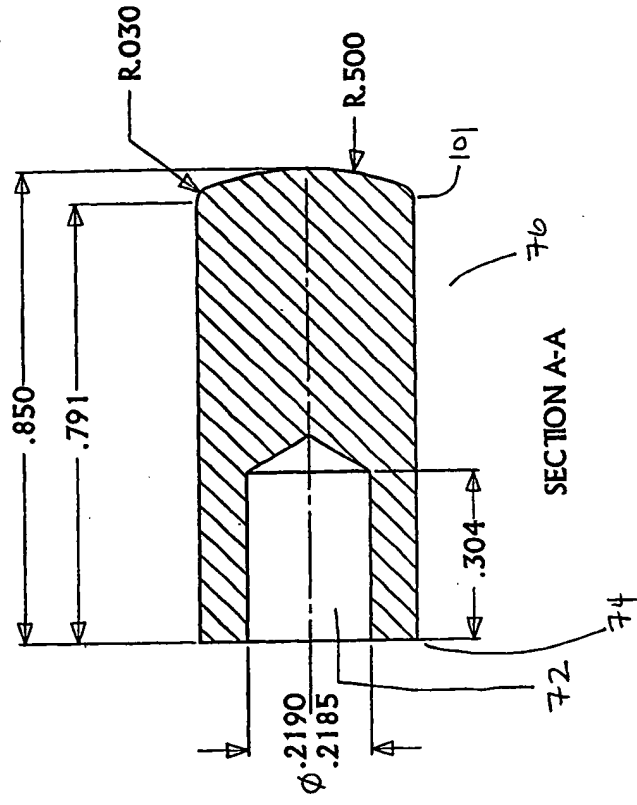


FIG. 7B

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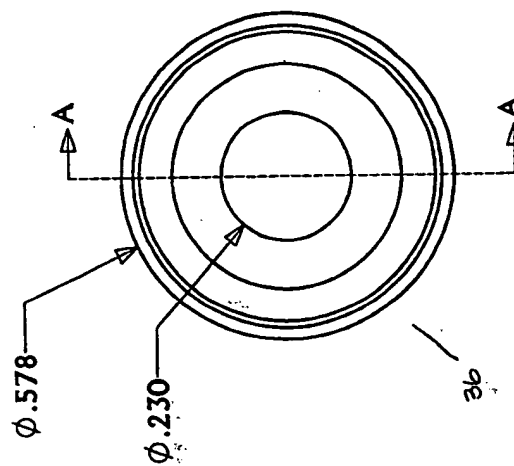


FIG. 6A

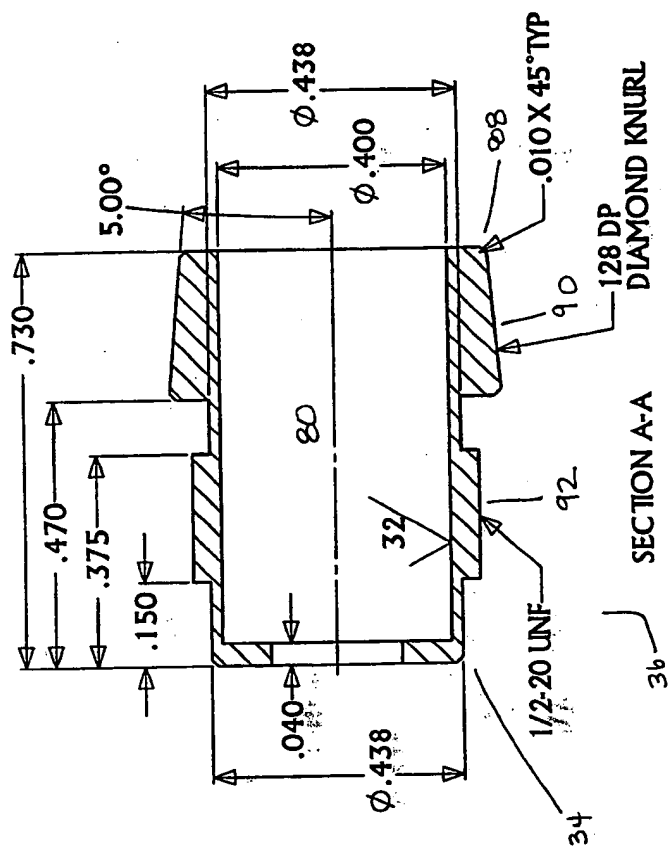


FIG. 6B

[illegible]

FIG. 5A

FIG. 4C

SCALE 0.001



FIG. 4A

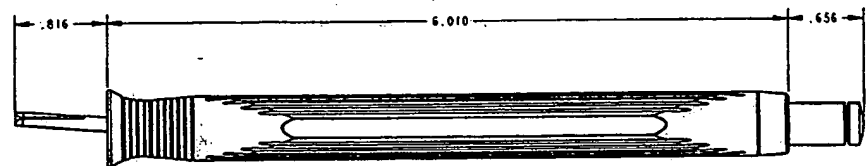
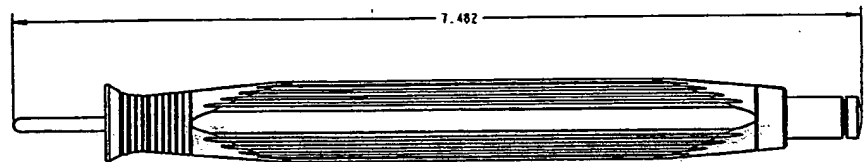


FIG. 4B

00128520 040000 000010 02582100

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FIG. 3A

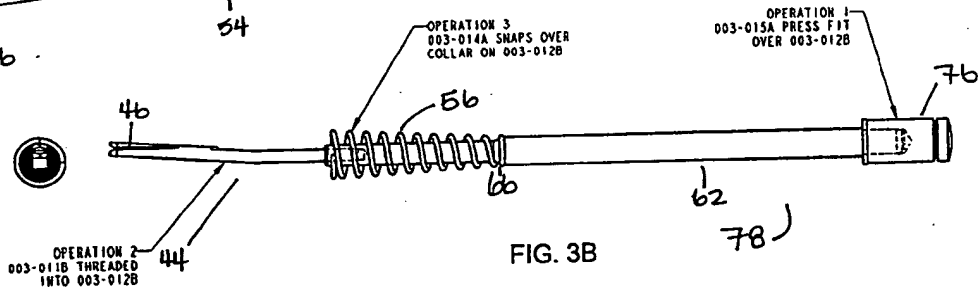
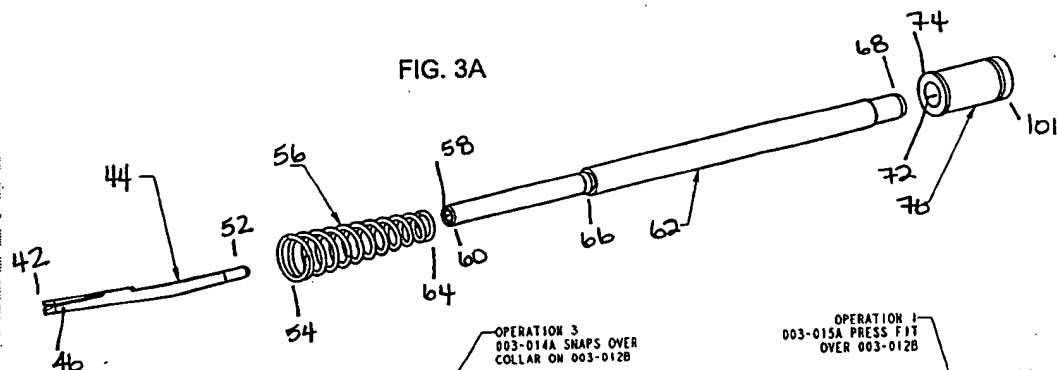


FIG. 3B

FIG. 3C

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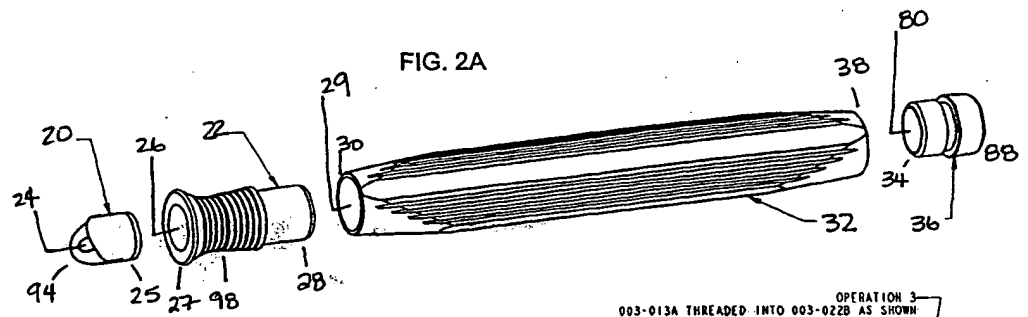
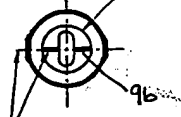


FIG. 2A

OPERATION 1
003-023C PRESS FIT
INTO 003-021C AS SHOWN

OPERATION 2
003-021C PRESS FIT
INTO 003-022B AS SHOWN

OPERATION 3
003-013A THREADED INTO 003-022B AS SHOWN
PERFORMED PRIOR TO INSERTING SUB ASSEMBLY 003-020B
ALSO REFER TO DRAWING 003-000B



HORIZONTAL SLIT IN
003-023C MUST BE
PARALLEL TO AXIS IN
003-022B WITHIN $\pm 5^\circ$
AS SHOWN ASSEMBLED

FIG. 2C



FIG. 2B

000010 00000000

FIG. 1A

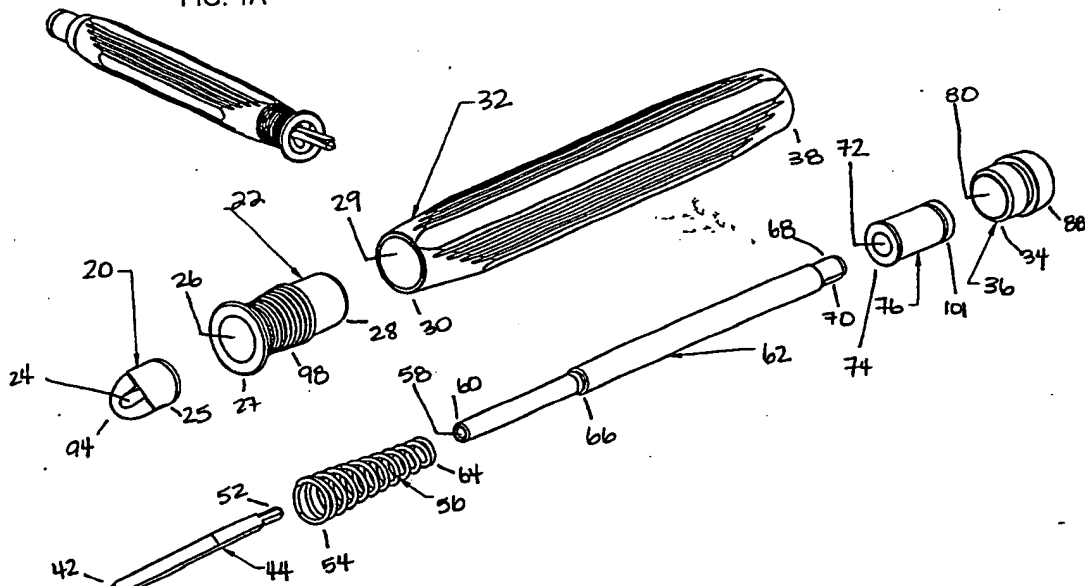


FIG 1B

